



Facility Asset Management Strategy: FY12 through FY22



New Redmond Helicopter Hangar



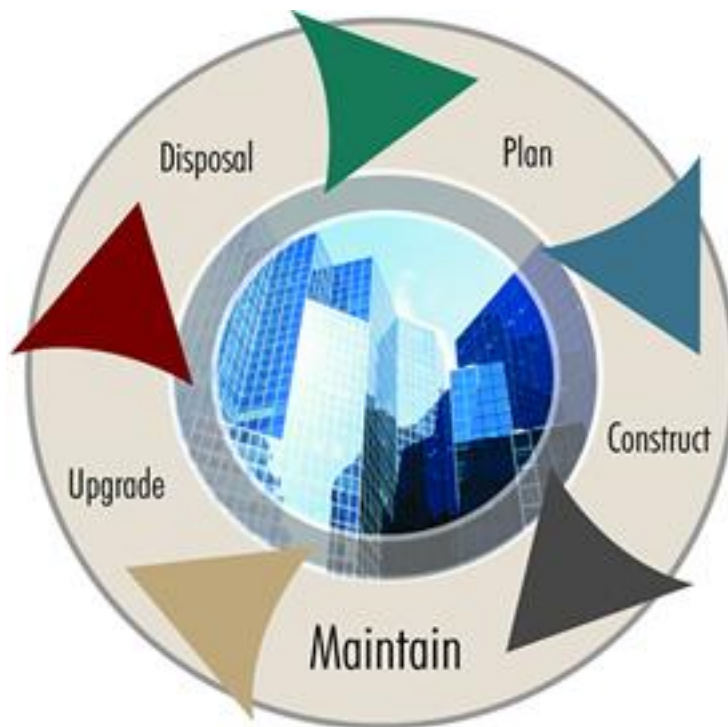
New HMEM Shop at Bell



Santiam Control House Remodel

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The Lifecycle of an Asset

1. Purpose and Scope

There is growing recognition across the world that infrastructure providers cannot just focus on meeting business needs through investment in asset creation without recognizing the long-term costs of ownership, operations and maintenance and finally, rehabilitation, replacement or retirement. This awareness has led to the evolution of the asset management standard that encompasses:

- Providing a defined level of service and monitoring performance
- Managing the impacts of growth through demand management and infrastructure investment
- Taking a lifecycle approach to developing cost-effective management strategies to meet those defined levels of service
- Identifying, assessing and managing risks
- Having a long-term financial plan that identifies required expenditures and how it will be funded

Facility Asset Management at BPA

Facilities Asset Management was formed in 2006 in response to the BPA Asset Management Enterprise Process Improvement Plan. Facility Asset Management is responsible for the planning and management oversight of nonelectric facilities as well as site-development systems such as fences, parking lots, sidewalks and driveways.

Clarification of which assets are classified as nonelectric and Facility Asset Management's responsibilities continues to evolve and has been identified as a gap in the current program. However, for the purpose of this document, nonelectric facilities are defined as:

"All site buildings, their associated mechanical, structural, and utility systems, surrounding grounds and other fixed improvements upon the land within the sites controlled by the agency. Components that directly generate, transmit, or control marketed/high voltage power or station service are excluded as are electrical support systems for the control centers, and the initial funding and construction of new facilities/upgrades driven by transmission system needs*"

*Currently, leased facilities such as the BPA Portland headquarters building are not part of the Facility Asset Management program.

The majority of BPA's nonelectric facilities are operated and maintained by Transmission Services and directly and indirectly support Transmission's core business.

At the time the facilities asset category was created, nonelectric facilities, historically known as the nonelectric plant program, existed in a predominantly Transmission-centric culture. Asset development, maintenance and financial planning did not necessarily involve a detailed assessment of existing or future needs or impacts. Investment, re-investment and maintenance plans were usually an exercise of fitting tasks or projects into available budgets with minimal strategic guidance or anticipation of potential changes in the

operating environment. The resulting decisions were often to defer maintenance on nonelectric facilities in order to limit near-term costs and to target or redirect funding to critical electric transmission programs. In many cases, minimal repairs and emergency replacements were performed on facilities only to keep the nonelectric facilities operational. This way of doing business continued for over 10 years, and, as a result, the backlog of maintenance and repair grew significantly and drove facility reliability to unhealthy and, in some cases, unsafe levels.

The nonelectric facility portfolio currently consists of 1,013 buildings such as control houses, data centers, office buildings and storage facilities at 434 sites located across the agency service area of 300,000 square miles. The buildings portfolio has an estimated replacement cost of \$750 million.

The non-building assets component of the portfolio such as fixed cranes; fences; pavements; water distribution, storm and sanitary sewer systems; land; and other site improvements, are currently being inventoried. The inventory is scheduled to be complete in the 2013 fiscal year. Early indications are that the replacement cost for this component of the asset base is approximately \$400 million. As such, the replacement value of the entire nonelectric facility portfolio is roughly \$1.15 billion.

Program Assets Criticality and Priority




A site may have numerous assets in multiple asset groupings. For example, a substation may have a control house, a maintenance shop, a warehouse, and a small storage shed, each with its own potential impact to BPA's operations. The criticality, or importance; of facility assets is dependent upon their role in the operation of the power marketing/delivery system and in ensuring business continuity. As such, FAM has defined asset criticality by asset types rather than for individual sites. This provides more granularities and targeting of limited resources.

Following this approach, the most critical assets are those in the Utility grouping which, as shown below, house system-critical functions like control houses/rooms and relay systems. Failure of these facilities could have immediate and serious impacts to the operation of the power system. Facilities that house data centers are also included with priority 1 assets due to their importance in sustaining BPA's computing infrastructure. In addition to power system impacts, these sites may also affect employee safety and productivity.



Five asset priority levels have been identified, as shown here:

Facilities Program Assets

Building Asset types in order of criticality:

Importance Level	Asset Grouping	Asset Type		
1	Utility 1	Control Center Data Center	Control House Microwave	
2	Utility 2	Control House Control/Maintenance Relay House	Microwave Engine Generator Buildings	
3	Office, Maintenance and Special Purpose	Office - Guard Station Storage - Fuel and Haz Mat Maintenance HQ Office - Business Critical	Storage - Special Maintenance Shop Administration Meter Houses	
4	Storage	Other - Pump House Office - Classroom / Training Site Utility Storage General	Material & Equipment Vehicle Transportation Research	
5	Other	Oil House Other Rental	Untanking Tower Abandoned	

Non-building asset types:

	Pavement Septic Systems Storm Water Drains	Fences Wells	
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Building Systems criticality

Just as each Asset Grouping has varying levels of prioritization, each system within an asset poses a different level of importance as relates to the operation of the building. The criticality of building systems reflects the role that a system plays in keeping an asset functioning safely, efficiently, and reliably.

The American Society for Testing and Materials (ASTM) E1557 Uniformat II standard establishes a classification of building systems and related site work. Systems, as defined here, are major components common to most buildings and usually perform a given function, regardless of the design specification, construction method, or materials used. Using this standard, FAM has categorized systems into five priority groupings based again on the impacts a system has on the operation of the transmission and power system and in supporting critical business functions. The figure below shows a summary of the five priority levels and representative examples of the types of systems associated with each.

		System Priority				
		Priority	Priority	Priority	Priority	Priority
		1	2	3	4	5
System Category	Substructure, Shell, Interior Construction, Special Construction, & Finishes	Roof Exterior Doors Superstructure	Exterior Walls Stairs		Foundations	Interior Walls Interior Finishes Ceilings
	Electrical, Plumbing, & Fire Protection	Domestic Water Emergency Light & Power Fire Protection	Branch Wiring Lighting Equipment	Restroom Fixtures Drinking Fountains	Roof Drainage	Natural Gas Distribution
	Communication & Security	Security Alarm & Detection	Public Address			
	Heating, Ventilation, & Air Conditioning	Heat/Cooling Units Controls	Gas Supply	Air Distribution Exhaust Fans		
	Equipment & Conveying Systems		Elevators Wheelchair Lifts	Warehouse Equipment	Kitchen Equipment Central Vacuum	Vehicle Lifts Power Washing
	Site Development, Utilities, & Site Construction	Fences / Gates	Site Lighting Water Supply	Parking Lots	Sidewalks	Landscape

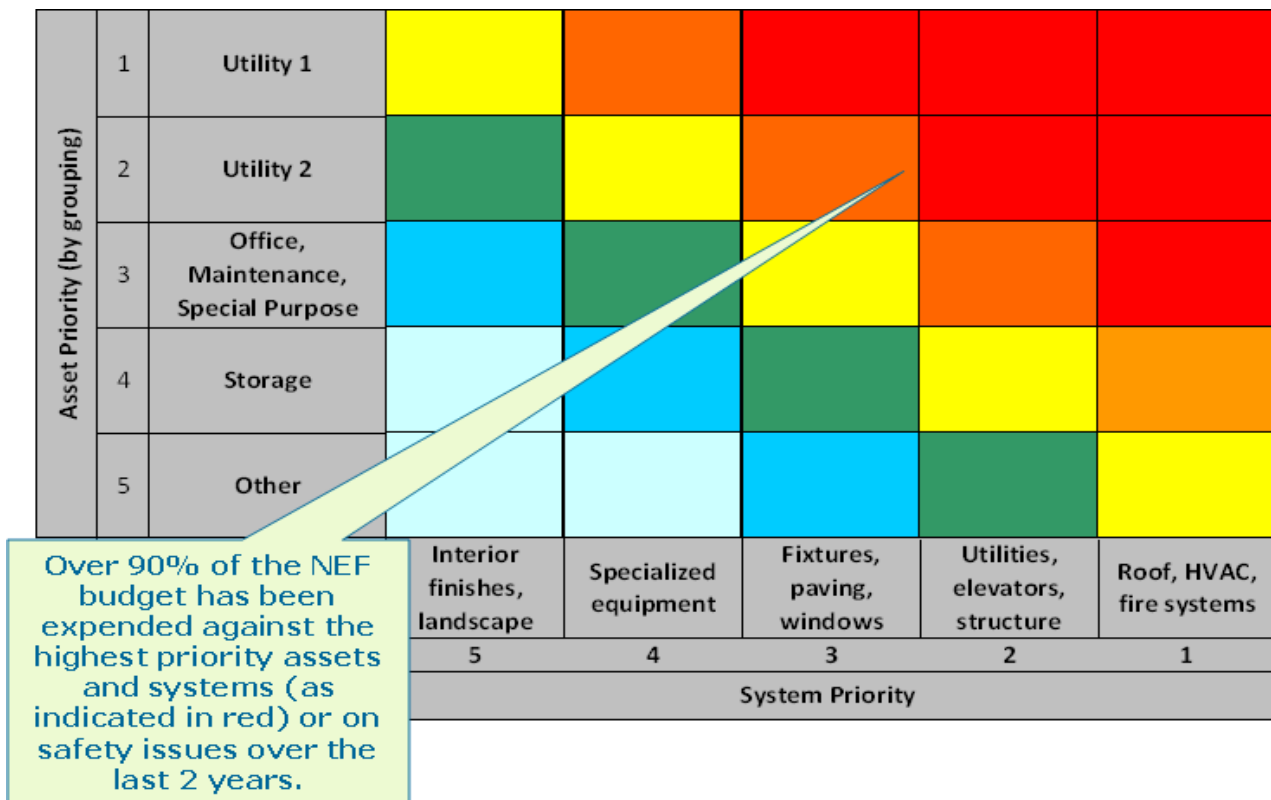
The figure above only shows a sample of the different types of systems in each priority level. This table provides a representative sample of systems that have been identified as Priority 1 and that have the most significant potential impact on asset operation:

System Priority Level – Level 1

• Controls and Instrumentation	• Fences and Gates	• Roof Openings
• Cooling Generating Systems	• Fire Protection	• Roofing
• Dust and Fume Collectors	• Floor Raceway Systems	• Special HVAC
• Emergency Light and Power	• Glazed Roof Openings	• Superstructure
• Exterior Doors	• Grounding Systems	• Terminal and Package Units
• Exterior Stairs and Fire Escapes	• Heat Generating Systems	

Investments

In addition to the primary investment driver of addressing life-safety issues, the combination of the building's and system's importance, along with their condition or health (based on inspection) drives the primary prioritization methodology and is reflected in the actual allocation of funds expended over the last 2 year period:



2. The Strategy

This facilities asset management strategy provides the guidance necessary to deliver a total solution nonelectric facilities asset portfolio that:

- Fully meets all operational performance requirements,
- Is compliant with all regulatory and voluntary policies and
- Is at the lowest cost practicable.

The scope of this program spans the entire life cycle of said assets (create/acquire, operate and maintain, renew/dispose)

Facility Asset Management will accomplish this by creating a cross-agency program that:

- Employs a tightly defined set of criteria for making asset-related investment decisions;
- Aligns responsibilities and accountabilities;
- Provides the guidance standards for asset planning, design, construction and care; and
- Is tightly linked and aligned to the strategic objectives of the Agency.

Key Accomplishments

Since the 2010 IPR, Facility Asset Management has, through its strategic partners in Transmission Engineering and Transmission Services, invested over \$30 million in repairing or replacing critical facilities in the BPA system. Facility Asset Management has:

- Invested over \$4.4 million in new or rehabilitated roofs;
- Executed almost \$2.5 million in HVAC systems replacements, upgrades or repairs;
- Completed seismic upgrades at 11 critical buildings at a cost of over \$3.4 million;
- Repaired and upgraded the entire switchyard storm drain system at Port Angeles, Wash; and
- Executed over \$2.8 million in roads and parking upgrades and repairs projects.

In the building replacement/additions area, Facility Asset Management has invested over \$19 million in capital construction projects that include:

- A new Heavy Mobile Equipment Mechanics (HMEM) shop in Spokane, Wash.;
- A complete modernization and asbestos remediation at the control house at Santiam substation located near Salem, Ore.;
- A new water distribution system at the Covington Substation in Kent, Wash., that replaced a 70-year-old system; and
- A new helicopter hangar in Redmond, Oregon.

In addition to direct facilities work, Facility Asset Management has made progress in improving the overall management of the program. Facility Asset Management has:

- Created a design standard, or “guiding principals,” document that will drive the development and/or rehabilitation of BPA’s maintenance headquarters in a consistent, sustainable, economical and efficient manner;
- Adopted the International Building Codes which will result in a portfolio that is more consistent and more compliant;
- Completed an assessment of current operations and maintenance practices; and
- Developed a life-safety manual that gives guidance in resolving egress issues in BPA’s unique buildings that building codes do not address.

3. Objectives

The overall, long-term objective of the Facility Asset Management program is to *optimize*, or fully leverage, the asset portfolio to provide reliable, sustainable nonelectric assets that fully meet current and known future agency business needs and ensure performance and condition standards that comply with all applicable regulations while minimizing the life cycle costs.

The Internal Business Services (IBS) organization has adopted long-term objectives and plans to initiate a benchmarking effort to establish key metrics that will enable BPA to track the performance of assets over time. BPA has not yet selected the specific measurements that will be adopted but has identified metrics for consideration and verification through a benchmarking process that will be completed by the end of this fiscal year.

The four long-term objectives are listed below with examples of milestones and performance metrics to be considered.

1. Systems are in place to assess the health and performance of assets

- a. Health: An inventory of the nonelectric facilities portfolio is completed.
- b. Health: Processes and resources are in place to inspect the condition of the nonelectric facilities portfolio once a year.
 - i. Metrics: Facility Condition Index, Systems Condition Index.
- c. Performance: A facilities management information system is in place by FY 2014.
 - i. Metrics: cost of ownership, asset data, warranty recovery, workflow.

2. Investments are prioritized based on need, risk and return on investment

- a. Priority/risk: A method is currently in place today and will become more consistent and objective as the asset health information becomes more accurate and complete.

- b. Need/return on investment: Nonelectric facilities design standards and master material specifications are in place.

3. Industry standard operations and maintenance practices are executed

- a. Comprehensive preventive maintenance, workflow, planning and scheduling programs and resources are in place by FY 2015.
 - i. Metrics: percentage of emergency repairs, productivity rates, scheduled work completion, inventory performance.

4. Assets are sustainable and compliant

- a. Energy intensity reduced 30 percent (over 2003 baseline) by FY 2015.
- b. Non-potable water use reduced 20 percent (over 2010 baseline) by FY 2020.
- c. Potable water use reduced 26 percent (over 2007 baseline) by FY 2020.
- d. No adverse compliance findings (Occupational Safety and Health Act, Environmental Protection Agency, International Building Codes) by FY 2015.

4. Key investment drivers

The internal and external forces that affect asset investment decision making include how assets are designed and constructed, how they are operated, how they are maintained and how they are decommissioned. Some of the key drivers are listed below.

Expected levels of service: Facility Asset Management must understand and provide adequate resources in order to meet the needs of the Agency in terms of the service attributes of quality, reliability, responsiveness, timeliness, sustainability and cost.

Business continuity: Much of BPA's asset infrastructure was built before the seismic threat to the region was fully understood and before modern building codes were in place. As a result, many of BPA's most critical facilities are in danger of failing during a seismic event. This presents an unacceptable risk to operations and to the personnel that inhabit these structures and has driven a program of critical building seismic upgrades.

It is expected that the recently reorganized departments of Continuity of Operations and of Security and Emergency Response will drive additions and changes to the facility infrastructure in the future.

Historical requirements: BPA, in conjunction with a historical consultant and state historic offices, has determined that buildings constructed before 1974 may be historically significant. This determination may drive certain design/construction requirements and could increase costs and significantly delay some projects.

Functionally outdated assets: Some facilities do not support modern operational needs. Facilities that were built for functions that are no longer applicable (for example, untanking

towers, research and development test facilities and oil houses) have been inefficiently repurposed or abandoned and the resulting shortcomings must be addressed.

Expansion: Transmission's expansion investment program consists of capital projects required to increase capacity and improve reliability to meet load growth, meet generation interconnection and customer service requests, or provide congestion relief. Projects include minor facility upgrades, major transmission line work, communications system upgrades and substation additions. Transmission's projects will have an affect on the Facility Asset Management program by creating more assets to operate and maintain and by driving changes to asset maintenance plans. New functions, such as bare handing, drive new facility additions and remodels in order to accommodate new crews and their equipment.

Executive orders: Executive orders 13423 and 13514 issued in 2007 and 2009, respectively, call for a "greening of the Federal Government." BPA has responded with a Sustainability Action Plan to meet the directives in these orders. Facility Asset Management, in conjunction with its partners in operations, engineering and energy efficiency, is initiating activities aimed at reducing energy intensity, optimizing water resources, implementing sustainable building design and complying with federal guiding principles on new building construction.

Security: BPA's Critical Asset Security Plan provides the agency's strategy for the implementation of safeguards and security programs as they relate to protecting critical assets. This plan supports the implementation of the Department of Energy's Graded Security Policy, the North American Electric Reliability Corporation Critical Infrastructure Protection Standards and the Department of Homeland Security Presidential Directive - 12.

These requirements result in the need to install and maintain high cost/high tech security equipment and to greatly limit personnel access in some areas.

Building codes (Life safety): Buildings were originally designed and built to meet the codes in place at the time of construction. Most facilities were built before 1960, and many may not be compliant with current life safety, fire protection and seismic event codes. This represents an unacceptable risk to personnel and to the operation and preservation of these assets. Older buildings are not mandated to comply with modern codes unless they undergo a major remodeling. Unfortunately, this requirement was not consistently complied with in the past, which has resulted in some buildings that are technically noncompliant.

Another practice that has not been uncommon in the past is; ad hoc facility modifications or remodels to change the use of an existing facility. Unfortunately, these activities frequently resulted in noncompliant, undocumented structures that sometimes were less than successful because they did not follow a comprehensive master use plan for a building/site or district.

While proactively resolving these issues or bringing existing facilities up to current code may, in some cases, be the right thing to do, the elements of risk/value and cost/benefit should be evaluated and prioritized before making such investments.

Hazardous materials (Life Safety): The agency needs to identify, manage and abate hazardous substances within existing facilities. Asbestos, lead, mercury and polychlorinated biphenyls are just a few of the known or suspected hazardous materials that may exist in some BPA facilities and represent potential threats to the personnel working in and around these buildings.

5. Gaps, initiatives and risks to achieving program objectives

Objective: Systems are in place to assess health and performance of assets.

*Gaps/initiatives/risks: The asset inventory information and the asset condition and health data generated through previous efforts are currently inadequate. In order to properly fund and resource the program, it is critical to completely and clearly understand the condition, use and needs for each facility. One of the initiatives intended to bridge these gaps is a comprehensive facility condition assessment program called **MECA: Bi-Annual Work Planning and Scheduling**. This entails a clear understanding and record of the asset inventory and an annual inspection that drives simple repairs while identifying “red flags” for engineering-level assessment. The effort ultimately drives a programmatic approach to work planning. Another initiative called **Organizational Alignment** employs a rigorous methodology designed to identify the service levels, processes, capabilities and organizational structure that would best support achieving the long-term objectives of the program.*

The risks to closing these gaps are the potential lack of funding, unreliable access to the resources necessary to gather condition information and to enter and maintain asset performance data, and the absence of a robust facilities management information system.

Background

At the time the Facilities asset category was created, non-electric facilities, historically known as the non-electric plant (NEP) program, existed in a predominantly Transmission-centric culture. Asset development, maintenance and financial planning did not necessarily involve a detailed assessment of existing or future needs or impacts. Investment, re-investment, staffing levels and maintenance plans were usually an exercise of fitting tasks or projects into available budgets and resources with minimal strategic guidance or anticipation of potential changes in the operating environment. The resulting decisions were often to defer maintenance on non-electric facilities in order to limit near term costs and to target or re-direct funding to critical electric transmission programs. In many cases, minimal repairs and emergency replacements were performed on facilities only as needed to keep the non-electric facilities operational. This way of doing business continued for over 10 years, and as a result, the backlog of maintenance and repair (BMAR) grew significantly and drove facility reliability to unhealthy levels and many assets/systems failed long before their expected life-cycle was realized.

In April 2007, FAM began an effort to create a comprehensive inventory of all NEF assets and to conduct an initial, high-level overview of the condition of all BPA owned buildings and systems. As a part of this process, each building and its associated architectural, electrical, and mechanical systems was inventoried and inspected for deficiencies. These initial building assessments were completed in December, 2008. However, it has become ever increasingly clear that these assessments were a “high-level overview” at best and that much more rigor needs to be applied in order to create an accurate assessment of condition by which more accurate prioritization decisions can be made.

Beginning in FY10, FAM has embarked on an initiative to inventory the NEF non-building assets, such as fixed cranes, fences, pavements, water distribution, storm and sanitary sewer systems, land and other site improvements. Because these inventories and assessments are not yet complete, these systems represent an unknown risk. However, since these improvements existed in the same reactionary maintenance culture as the NEF building assets; and taking into account some of the observations made recently, FAM anticipates the identification of substantial risks to operations and personnel. As a result, this will drive the need for major investments in these asset types. Unfortunately, this was not anticipated and was not part of the original funding structure. Completion of this non-building inventory and assessment is scheduled for the end of FY13.

In FY11, it became increasingly clear that, in addition to addressing the years of BMAR, FAM needed to develop a more comprehensive, long term and programmatic approach to how it manages its assets. The basic structure of the approach developed is to:

1. Assure there is an accurate inventory and record of the condition of our assets. The first step of this will be accomplished through an enhanced and standardized annual inspection; currently envisioned to be executed by the TF Facility Maintenance Workers (FMW's) and will entail in-depth training. This will identify simple repair and replace items to be completed by TF but will also identify “red flags” which will drive targeted, more in-depth analysis by engineering-level resources.
2. Conduct annual Mechanical, Electrical, Civil and Architectural (MECA) comprehensive assessments. These second step assessments will consider virtually every asset and system within a site targeted by information from the FMW inspections. The resulting deliverables will be based on a prescribed, objective and repeatable process and will provide estimating-level accurate (+/- 20%) budget information and detailed enough to drive efficient, “bundled” scopes of work for subsequent year's execution.
3. Establish Program Management (PgM) Resources. It is envisioned these resources would have engineering level expertise in the disciplines outlined above and would take ownership of meeting objectives within their categories of responsibility by assuring adequate standards were in place, priorities and budgets were set and by triggering projects. While it is not envisioned these resources would directly

manage projects, they would be accountable for the project outcomes as well as providing oversight to design, materials and maintenance standards.

4. Provide an integrated Facilities Management Information System (FMIS) to manage the entire program. With visibility to complete and accurate O&M information improvements to reliability and cost of ownership can be made by making targeted changes to design, materials and maintenance standards.

Elements #1 and #2 are under development while elements #3 and #4 will be addressed in the current Organizational Alignment and FMIS studies. (See Section 7)

Objective: Investments are prioritized based on need, risk and return on investments.

*Gaps/initiatives/risks: The execution of capital and expense work is inconsistent. **Integrated planning** is an initiative that will identify and coordinate projects that affect facility assets and is intended to reduce duplicated efforts, minimize operational impacts and leverage economies of scale by combining or, “bundling,” work scopes. Another initiative that will have a positive affect on the portfolio is to implement facility **design standards and materials specifications**. A consistent approach to design and construction will result in a portfolio that is cheaper and easier to operate and maintain.*

Background (For the built environment-primarily expense budget)

While some of the baseline condition information about the existing assets is not as accurate (see above) as it will eventually be, the methodology for prioritization of each year’s work is fairly mature. Each year, a systems-generated list of defects known as “requirements” is created. This list is validated, estimated and re-prioritized by District, Transmission Engineering and FAM staff. Ultimately a scope of work for the following fiscal year is determined based on the following criteria:

- Prioritized based on asset criticality, system criticality and condition/likelihood of failure
- Criticality of need: likelihood of failure/impact of failure
- Anticipated resource availability (ability to promise)
- Estimated costs (including economies of scale due to bundling)
- Funds availability
- Coordination with other work
- Sustainability

Tasks within the work plan are then assigned a “confidence factor” to deliver of high, medium or low. This is a subjective determination based on past practice, complexity, etc., and is simply used as a tool for making mid-year adjustments to the program.

Management from NWM and TE then sign off on same and the work plan is published; generally by July of the preceding year. During the work plan year, when new issues arise, an accelerated version of the preceding occurs whereby decisions regarding adding to the work and/or deferring work are made and documented.

Background (For the “to be” built environment-Primarily Capital budget)

For Capital eligible work (proposed new construction, major unit replacement, hazardous material abatement or decommissioning) FAM has created an initial prioritization methodology that considers the following drivers: (see Addendum B for more detail)

- Need
- Costs
- Benefits
- Risks
- Other

Each driver is broken into several varying dimensions and a weighting factor applied to each. Potential projects are rated and ranked by FAM staff and those that rise to the top of each Capital Assets program, are presented to a cross-agency team called the Facility Assets Business Board. (FABB) The FABB consists of representatives from FAM, Transmission Services, Transmission Engineering, Safety, Security and Environmental. The FABB will consider whether or not the proposed project should be fully developed into a business case, generates alternatives, looks for opportunities to coordinate or deconflict with other work and considers resource availability. If a proposed project is deemed viable, a project manager (PM) is assigned to work with a FAM Planner to further identify and evaluate alternatives, create estimates and to develop a business case. After which, the PM will make a presentation to the FABB for consideration to recommend approval for a project. If the project is acceptable to the FABB, the normal process of garnering approvals is followed within IBS and onto the ACPRT and/or CAB, as necessary.

Objective: Execute industry standard operations and maintenance practices.

Gaps/initiatives/risks: BPA is not yet approaching nonelectric facilities maintenance in a strategic, comprehensive and cohesive manner. The Agency has not fully clarified operations and maintenance responsibilities or service level needs and expectations. In FY 2011, Facility Asset Management sponsored an assessment of the nonelectric facility operations and maintenance program that calls for operations and maintenance to be centralized and for the agency to adopt best maintenance practices.

***Best maintenance practices** is a multi-year initiative that will result in a staged implementation of leading operations and maintenance practices such as a comprehensive preventive maintenance, right-sized and strategically sited stores, planning and scheduling, and reliability centered maintenance. The **Organizational Alignment** initiative is intended to provide the structure and resources to implement and sustain these practices while a robust **facility management information system (FMIS)** will track the health and performance of the assets and provide management the information necessary to make better investment and maintenance decisions going forward.*

Background

As outlined above, the approach to NEF O&M over the years has resulted in a portfolio that is, in some case, failing prematurely and adding unnecessary costs/risks to the Agency. Returns on investments are never realized if an asset/system requires replacement too soon or when a reactionary, break-fix approach to maintenance is employed.

Below are just a few examples of what was found during routine inspections:

Widespread, general examples:

(See Addendum C for pictures)

- Clogged roof drainage systems or gutters that have led to roof leaks, flooded basements and cracked foundations.
- Sidewalk failures due to vehicles driving over them.
- Air conditioning (AC) failures due to failure to clean condensers, evaporators, filters and housing drain pans.
- AC reduced capabilities due to improper refrigerant charge.
- Heating unit failures due to improper inspections.
- HVAC system reduced capabilities due to improper window installation - single pane windows.
- Asphalt failures due to neglect or extended use beyond reasonable life expectancy.
- Storm water back-ups into substation yards due to failure to inspect and clean storm drain system outfalls, swales and drainage vaults. These failures have also been caused by adding new impervious surfaces which drain into existing, under-sized systems which becomes overwhelmed during heavier runoffs.

- Potential fines and emergent work due to out of compliance with EPA regulations due to failure to clean or replacement of oily water separator filters.
- Failures of low voltage electrical, mechanical systems or structural systems due to systems having been improperly installed without going thru the proper approval process. This type of work has also resulted in safety violations and non-compliant facilities.
- Failure of installed emergency diesel generator engines due to lack of understanding of approved maintenance requirements.
- Failure of overhead cranes due to lack of understanding of approved maintenance requirements. These cranes were also in violation of safety codes due to not being inspected by qualified personnel.
- Basement flooding due to improper inspection of sump pump float and pump operating systems. In many cases, sump pumps were operated in a “run to failure” mode.
- Numerous examples of damage due to rodent infestation which also represented a threat to the health of a building’s occupants.

Some more specific, troubling examples:

- During a period of heavy precipitation last year, an entire sub station in the North Region came to within minutes of becoming completely de-energized. Water was pouring into the utility tunnels and control house basement. Even with all of the BPA pumps operating as well as those borrowed from the City and local fire department, the water rose to within inches of the interposing relays. Improperly engineered/constructed drain lines and poorly maintained drainage ditches were the causal factors.
- There was a complete failure of a septic drain field in the East Region, at a repair cost of \$40K. This failure was due to a worn out, \$5 baffle that should have been discovered and replaced as part of a routine inspection.
- Very Early Smoke Detection Apparatus (VESDA’s) are commonly installed in environments where a highly sensitive, rapid smoke detection capability is required...usually mission critical facilities. These devices are required by code to be inspected annually by certified technical personnel. At a critical facility in the South Region, FAM was contacted to fund the replacement of several VESDA’s that had failed and had not been inspected for “over 10 years”.

All the above is only to illustrate how important it is to run maintenance like a business and the risks and effects when it is not.

Objective: Assets are sustainable and energy efficient.

Gaps/initiatives/risks: Executive orders 13423 and 13514 and guidance received from the Department of Energy have resulted in a facilities sustainability action plan. There are several objectives within this plan, including reducing energy intensity 30 percent by 2015 and water use 20 percent by 2020.

Facility Asset Management plans to bring in a resource efficiency manager to work with BPA's Sustainability Program along with various engineering and operations staff in BPA's Transmission and Corporate organizations to focus on areas identified as essential to the achievement of the agency's energy and sustainability goals.

Some of the risks are a lack of accurate data, including metering information, and inadequate records of the energy reducing projects that have been implemented since 2003. Finally, the criterion for effectively integrating sustainability gains into the other priority drivers is still unclear.

Background

BPA's sustainability initiative is all about being earth-friendly, cost effective and sustainable. Agency efforts are focused on cutting our carbon footprint by saving energy, water conservation, reducing waste, cutting petroleum use, green buildings, and engaging employees to take action.

BPA established a Sustainability Team in December 2009. The mission statement is to support and encourage innovative, cost-effective business practices that reduce BPA's effect on the environment, conserve resources and cut greenhouse gas emissions. An action plan was adopted in March 2010 and has 27 major goals ranging from electricity and water use reduction targets to the development of an employee involvement structure.

Of the 27 goals included in the Sustainability Action Plan, FAM has a leading role in many of them including energy and water use reduction goals and building standards such as net-zero, Federal Guiding Principles and LEED.

6. Recommended Strategy Summary

FAM has come a long way in its first 4 years. There is a better understanding and more clarity about the state of the NEF asset management program the actions needed in order to meet the long term objectives.

Each of the 16 initiatives below is designed to meet one or more of the asset program's four main objectives. Many of the initiatives have sub elements and a range of alternatives are described in complete detail in section 7 below.

This table shows the relationships between the various Objectives and the specific initiatives designed to achieve those objectives.

	Objectives			
	Systems are in place to assess health and performance of assets	Investments are prioritized based on need, risk and return on investment	Execute industry standard O&M practices	Assets are sustainable and compliant
FY12-FY22 Initiatives				
Asset Program specific investment strategies				
Best Maintenance Practices				
Capital governance				
Continuity of Operations				
Design Standards and Materials Specification				
Facility Management Information System				
Funding Options				
Hazardous Materials Management				
Integrated Planning				
MECA Bi-annual Work Planning and Scheduling				
Organizational Alignment				
Project documentation and turnover				
Repair, replace or decommission methodology				
Resources				
Service/reliability expectations				
Space mgnt: utilization/remodel				

This table shows the relationships between the various Objectives and the specific initiatives designed to achieve those objectives.

7. Specific Initiatives

Asset Program specific investment strategies

Maintenance Headquarters Program: Funded-ongoing

FAM has established a master strategy for field maintenance facilities that has been approved by the Capital Allocation Board (CAB) in FY11. This program was developed by evaluating current maintenance activities, work practices, and facilities infrastructure. The program reflects industry standards and leading practices, and considers alternatives for providing required facilities. Analysis resulted in strategic and prioritized proposals for upgrades at existing maintenance facilities and provides a roadmap for new facility construction to support current and anticipated maintenance activities.

Radio Building Replacements Program: Funded-ongoing

FAM has determined that many radio communications buildings are at or past their expected life and are in need of replacement. Operationally, these buildings cannot be allowed to fail. This strategy, currently underway, will evaluate each building's condition, risk and other project drivers such as physical location/ accessibility, micro-climate, and property or other legal issues, etc.,

Transmission Services Facility Program: On hold

Facilities Asset Management has developed a strategy to address office space needs in the Portland/Vancouver area that will drive facility requirements for the foreseeable future. This strategy incorporates:

- Forecast of long-term staffing trends and workstation requirements in the Portland/Vancouver area
- Assessment of the adequacy and condition of Ross facilities and development of alternatives to address near- and long-term space issues
- Plan for dealing with space issues when business requirements result in fluctuating FTE levels
- Agency's rate objectives, financial health, capital availability that will impact office space solutions
- Agency emphasis on workforce productivity and efficiency
- Federal policy direction in favor of sustainable solutions consistent with Executive Orders 13423 and 13514 (low carbon footprint)
- Increasing regulatory demands on facilities
- Emerging business continuity requirements
- Evolving staff preferences and technologies

As a result of this analysis, FAM is currently evaluating the construction of a 5 story office facility to be located on the Ross Complex to meet the objectives identified in the strategy. A decision on whether to proceed with construction is anticipated by the middle of FY12.

Business Continuity Program: Funded-Ongoing

The scope of the Facilities Asset Management Strategy includes business continuity costs related to facilities assets. Critical functions supporting critical core outputs within the agency have been identified; those functions have developed and continue refinement to their Continuity of Operations (COOP) Plans. In response, FAM is involved in evaluating facility requirements necessary to provide alternate work sites for those critical functions. The evaluations include potential modifications to existing sites and the possible construction of new facilities. Funding placeholders have been included in the capital funding stream (currently through FY14) in anticipation of the results of the evaluation.

In addition, FAM has set aside \$2M in annual expense funds for seismic hardening of critical facilities. For these buildings, FAM follows the industry performance standards for existing buildings:

- ASCE/SEI Standard 31-03, Seismic Evaluation of Existing Buildings
- ASCE/SEI Standard 41-06, Seismic Rehabilitation of Existing Buildings

Eastside Alternative Operations Center: In Design

A 2007 DOE IG audit found that BPA did not have adequate geographic separation between its primary and backup scheduling facilities and recommended that BPA develop recovery plans that include strategies that ensure independent, alternate operating facilities which are not subject to the same hazards as the primary facilities.

BPA faces numerous risks to its operations and therefore also to its significant economic contributions to the region. The three primary risks to BPA's ability to sustain operations are:

- Targeted or local event impacting only BPA facilities (HQ/Ross)
- Small localized event impacting the Portland metro area
- Major regional event (Cascadia subduction zone earthquake)

The objective of the EAOF project is to significantly improve BPA's capability to recover and restore scheduling operations while satisfying the IG recommendations from the 2007 IG audit. This project specifically addresses the need to improve "alternate operating facilities," thereby allowing for improvement of capabilities and devolution plans.

To be sure BPA can recover in any of these scenarios our strategy must include; appropriate workspace, skilled staff, and IT systems. The Eastside Alternate Operating Facility (EAOF) is a cornerstone to strategy implementation in that it provides the specialized workstations configured to serve operational needs; a permanent home for skilled schedulers and IT specialists and secure permanent connections to BPA's proprietary networks, data, and business critical systems.

In addition to critical scheduling functions, current facilities supporting NERC-CIP alarm monitoring cannot support expanding requirements and the continuing increase in the number of NERC-CIP sites. Recent increases in the number of NERC-CIP sites and changes to NERC-CIP regulations require an alternate operating site to provide greater recovery capabilities for monitoring designated NERC-CIP sites. An alternate Alarm Monitoring Station is planned in the EAOF.

Past iterations of the Facilities Strategy supporting business continuity have also included an Alternate Data Center. Through extensive research and relationship building IT, the Office of Security and Continuity of Operations, Transmission Operations at the MCC, and Facilities Asset Management have developed a plan to utilize existing assets to a greater extent than previously thought possible. As a result expanding future Data Center capacity, if necessary, no longer requires a traditional "brick-and-mortar" facility.

Hazardous Materials Abatement and Restoration Program: Funded-Ongoing

Many BPA buildings may contain hazardous building materials (e.g., lead paint, asbestos, PCB contamination, etc) that pose a potential health risk to occupants and people performing facilities construction, repair and maintenance. A comprehensive plan intended to manage these risks is currently under development. This plan will entail awareness training, precautionary and testing procedures, risk management guidance and documentation procedures. This program within the Capital program has been established to fund the major abatements that will undoubtedly become necessary as a result of this management plan.

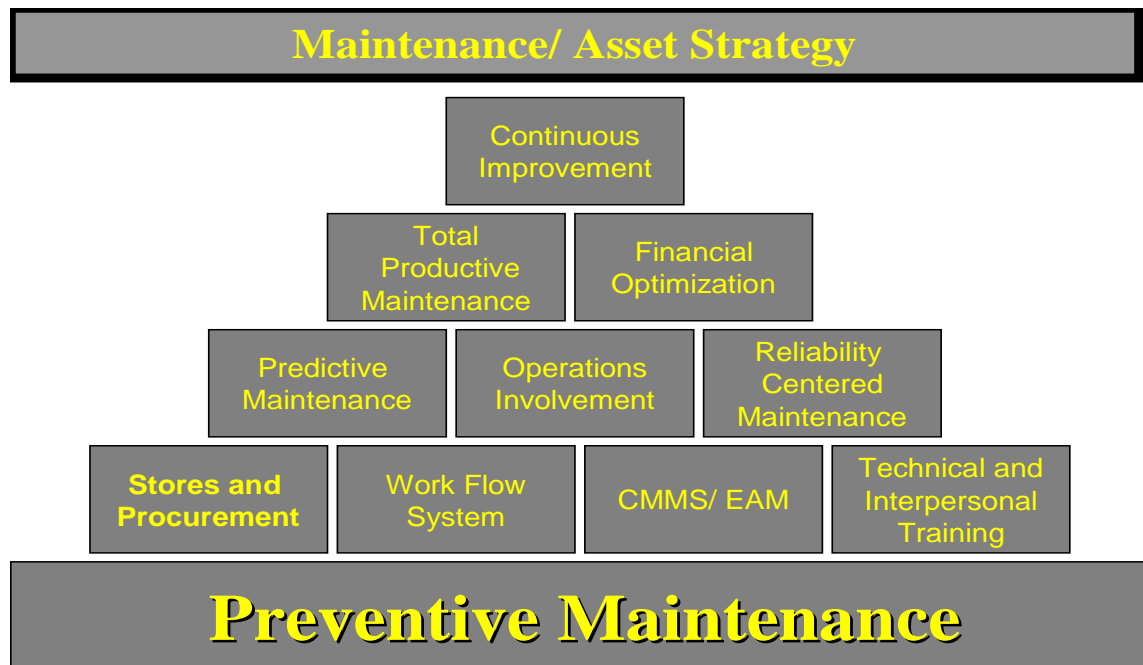
Decommissioning Program: Funded-Ongoing

Develop criteria and a strategy for determining when an asset is beyond its economic and operational life and as a risk mitigation, should be removed from the facility inventory. Similar to investment making decisions, an objective and comprehensive rigor needs to be applied to these decisions.

Best Maintenance Practices: Complete by FY17

This initiative entails an assessment of current non-electric facility maintenance practices in comparison to pertinent best practices and charts a course of constant process improvement. From this assessment, a gap analysis will drive a staged implementation targeted at improving overall maintenance effectiveness and meeting the Asset Management long term outcomes.

There are certain, widely accepted dimensions to a best practices maintenance program; and as the diagram below suggests, some are foundational and support the efforts to follow. The more sophisticated elements build upon the ones that come before and ultimately lead to a comprehensive, efficient and effective maintenance program designed to deliver the expected benefits at the lowest cost practicable.



Phase #1: Maintenance Focus-Complete FY13. Phase 1 includes a PM program focused on the basics. Goals identified are:

- 80% planned and scheduled work vs. 20% reactionary
- Development of a strategy to ensure the correct parts/services are available 95-97% of the time (i.e., stockroom inventory or just in time procurement).
- Work Flow: all maintenance information, costs and activity is tracked to a particular asset.

All the above requires dedicated estimating, planning and scheduling resources in addition to a Computerized Maintenance Management System (CMMS) or Enterprise Asset Management (EAM) System. A properly selected, implemented and managed CMMS/EAM is critical to creating a knowledge base of what needs to be done, what was done, budgeting and a mechanism for identifying opportunities for improvements to design, material selection and maintenance standards. Without this data, future phases, including Reliability Centered Maintenance (RCM) and Total Productive Maintenance (TPM), can not be achieved.

Phase #2: Uptime Focus-Complete FY15. Phase 2 includes the introduction of Predictive Maintenance techniques such as vibration and oil analysis and thermograph, intended to eliminate critical equipment breakdowns. Integrating Operations into the maintenance delivery functions and Reliability Centered Maintenance/engineering where reliability is engineered into an asset's initial design. According to industry experts in RCM, 95% of all maintenance costs are effectively specified by the decisions made during design phase of an asset's life cycle.

Phase #3: Enterprise Asset Management Maintenance- Complete FY17. This phase includes Total Productive Maintenance, Financial Optimization and Continuous Improvement.

Capital Governance: Ongoing

FAM has adopted the Agency Capital Project Business Case template, has created a process for ALL Capital Projects and chartered a cross-agency Facilities Assets Business Board (FABB) to help validate, prioritize, steer and recommend approvals for all proposed capital projects.

FAM will continue to work on coordinating/integrating its Capital process with TPW and TEPO.

FAM's Capital Process is a subject of an Agency A-123 document.

Continuity of Operations: Funded-Ongoing

In order to manage the risk of asset failures due to earthquakes, the Facilities Asset Management Strategy includes funding for a seismic hardening program. The program began in FY09 with seismic assessments conducted at select critical control houses. By the end of FY10, assessments were completed at 16 control houses. By the end of FY12, seismic upgrades will have been completed at 11 critical facilities.

The seismic hardening program is funded at approximately \$2 million of expense funding each year to continue executing assessments and necessary construction to mitigate risks from seismic activity.

Design Standards and Materials Specification: FY14

The legacy NEF assets evolved over the years without a unified, consistent and over-arching set of policies and standards. Each project was designed and constructed using previous projects as a template but was heavily customized based on each individual project manager's initiatives and by local needs and desires. The result is a portfolio that is inconsistent; making it difficult and expensive to maintain parts inventories, provide training, leverage specialized tools, service contracts, etc.

A set of design/development standards and master material specifications will be developed that will address these issues and result in more reliable and sustainable

assets that meet all regulatory and mandated standards (including compliance with Executive Orders 13423 and 13514) as well as existing and known future operational requirements at the lowest practicable Total Cost of Ownership (TCO). A more standardized asset portfolio will also allow the agency to better leverage operations and maintenance technical training, specialized tools and/or service contracted resources.

Facility Management Information System (FMIS): FY13

Each asset category at BPA is charged with developing information repositories for their assets. The repositories should conform to the data elements in PAS 55-2, 4.3.1(e). In summary, these data elements include:

- Asset demographics – technology type, location, ownership, licensing and age;
- Condition - test results, health, and maintenance history;
- Performance - failure history and benchmarks;
- Functional status – capabilities and obsolescence issues;
- Criticality - number of users, utilization and priority for continuity of operations;
- Costs – O&M costs, salvage, refurbishment, replacement and upgrades;
- Contractual - license compliance, vendor performance and service-level agreements for maintenance and support.

In addition, the asset information repositories developed by asset categories must:

- Designate the official source(s) of asset information;
- Provide ready access to those who need it, with an intuitive interface;
- Ensure data collection, validation, and entry processes are efficient, timely, accurate and regularly audited. Data should be collected and entered close to their origin, and validation should occur when the data is entered;
- Asset information needs on a recurring basis, so that essential data is collected and unnecessary data is not collected. Data requirements, including level of data detail, should be determined with subject matter experts through the following sequence:
 - identify the agency decisions that require asset information
 - identify the information that is needed to supply the decisions
 - specify the data requirements
 - determine data sources:
- Standardize data definitions.

FAM has a project scheduled to commence in Q3 of FY12 intended to develop a needs assessment and decision making document to be used in identifying a data solution that meets the full needs of the program. This project will consider addressing the needs of fleet and security and will look at existing in-house systems and systems under development as well as industry leading software solutions.

Funding Options: Ongoing

A possible component of funding sustainability initiatives might be to aggressively pursue the various rebates and incentives that are available to us. This is alternative is still currently under evaluation.

Hazardous Materials Management: FY13

Many BPA buildings may contain hazardous building materials (e.g., lead paint, asbestos, PCB contamination, etc) that pose a potential health risk to occupants and people performing facilities construction, repair and maintenance. This initiative will create a comprehensive management plan intended to reduce these risks by increasing awareness, training, creating management processes and procedures and documenting what was found and/or what actions were taken.

Integrated Planning: Ongoing

FAM will continue to look for ways to coordinate, integrate and deconflict projects across the asset portfolio. This entails good, timely communication and shared priorities across disparate groups such as security, IT, COOP and Transmission as well as supporting entities such as environmental, safety, historical and others. The intent here would be to identify these interdependent needs far enough in advance in order to drive the bi-annual IPR process.

MECA Bi-annual Work Planning and Scheduling: FY14

One of the gaps previously noted was the inaccurate and incomplete data FAM has relative to the condition of the NEF portfolio. Because of this, it isn't until after funds become available Oct 1, that the work plan actually starts to be implemented. The first several months are spent finishing up work that was not completed the previous year as well as making field trips to assess and design work budgeted in the current year. As such, many Contract Requests aren't sent to Supply Chain until the end of Q2 or sometime in Q3. When all is said and done, there are usually only a few months left to execute new work.

The MECA (mechanical-electrical-civil-architectural) Bi-annual process is intended to address these issues and many others. The foundation of which will be a comprehensive annual inspection performed by qualified technicians of all facilities. This will be a fairly high level overview intended to identify simple maintenance and repair items (as well as other attributes such as energy efficiency, safety, etc) and will serve to identify "red flags" for follow up by engineering level resources; these resources are better targeted this way. The engineering resources will be targeted to several sites per year to fully assess all the buildings and to design solutions to everything found. These design packages then would be executed over the next year or so. This not only addresses the timing issue mentioned above, but lessens the impact on operations and on Supply Chain (fewer, but larger contracts)

The other benefit to be derived here is the ability to make longer range projections for rehabilitation or replacement. The Program Managers required to affect this program will be able to, based on more accurate inventory and condition information, extrapolate life cycle information and make plans and budget for future work.

Organizational Alignment: FY13

To execute its program, FAM relies on complex interrelationships between Facilities Engineering, Transmission Field Services, Transmission Standards, Transmission Planning and stakeholders from other groups such as Energy Efficiency, Supply Chain, Security, and Safety. Depending on other organizations that may not have the same priorities and that may not recognize FAM's institutional responsibilities for facilities management, has led to poor project delivery, poor maintenance of equipment, increased costs, and lack of coordination for projects.

In 2011, Vesta Partners, Inc. conducted a cross agency O&M study assessing BPA's current effectiveness. A key recommendation identified in this study was the re-organization of BPA's non-electric facilities structure to allow for a central authority, responsibility and accountability for all non-electric O&M. The basic premise of this recommendation was to centralize the management of operations and maintenance of all non-electrical assets and to de-centralize geographically, the resources necessary to perform these functions. However, Asset Management is more than O&M. Asset Management covers the entire life cycle of said assets (Create/acquire, operate and maintain, renew/dispose). As such, it was felt that any restructuring or reorganizational initiative needed to consider the entire scope of the program.

Commencing in Jan, 2012 PeopleFirm, LLC, will commence a study to assess current and future needs, processes, capabilities, and structure and to provide recommendations for processes and organizational changes including a transition plan to best support the construction, operation, and maintenance of non-electric facilities. The first phase of this project (recommendation) is scheduled for FY12 Q3 with implementation to follow.

Project Documentation and Turnover: FY14

This initiative will address the shortcomings in the facility-related drawings, manuals, commissioning data, warranty tracking, training, spare parts, etc., by working with the Transmission Services Standards team to define, implement and monitor project delivery and documentation standards. Another deliverable of this initiative is to require all project information to be provided, stored and managed electronically in order to increase the ability to access and update as well as to leverage various sustainability initiatives.

Repair, Replace or Decommission Methodology: FY14

An initiative will be researched and developed to evaluate the merits of replacing assets outright as an alternative to continued incremental maintenance and will

consider all factors such as cost, efficiency, sustainability and transmission system operations. Resources might include the International Facilities Management Association (IFMA), various government entities such as DOD and GSA as well as other public and private institutions.

Resources: Ongoing

Master contracts: Acquire an adequate number of A&E and construction contracts at various locations to: conduct engineering level assessments, estimates and contracting documentation and/or execution.

Maintenance services contracts: As best practice preventive maintenance strategies and schedules are developed, it is anticipated much of it will need to be outsourced. In conjunction with Supply Chain and Transmission Services, this initiative will build on the strategic outsourcing initiative to develop standard contracts that ensure better implementation and management of these activities.

Design/build: is a project delivery system most large companies and governmental agencies use in affecting their projects. FAM intends to partner with Supply Chain to test this concept and evaluate whether it could be a viable option in executing our larger, bundled projects.

Field support resources: A majority of FAM's work will be outsourced. When contractors are involved, field support resources are needed to fulfill necessary functions such as escorting, safety watching and/or inspection. Utilizing existing BFTes for this will always be considered, however a mitigation plan for when they are unavailable is a necessity. This initiative is intended to increase CFTE resource availability for executing these tasks as well as re-evaluating the risk-value components of certain in-house operating restrictions placed on contractors when operating in and around BPA facilities.

Facilities-centric estimating capability: FAM requires access to reliable and accurate estimates for budgetary, planning and contracting purposes. BPA has an in-house project estimating capability in TPW whose core expertise is Transmission specific projects but is lacking in facilities experience. This initiative will evaluate and develop this capability either in-house or via a contracted, A&E-type of resource.

Supply Chain: FAM recognizes that Supply Chain may be resource-constrained in their endeavors to support our ever-growing need for contracting support. FAM will consider the efficacy of funding supplemental labor to assist with the development of Statements of Work (SOW's) and administrative tasks associated with the CO and COTR functions.

Force account and TF: FAM will work with Transmission Planning and Scheduling to determine when and how these resources can or should be employed in implementing FAM work.

Facility Maintenance Worker (FMW): FAM and TF will work together to more clearly

define the roles, responsibilities and effectiveness of the field FMWs by integrating best Maintenance Practices into their jobs and assessing their efficiencies by employing simple time-motion studies as a standard operating procedure.

Service/Reliability Expectations: FY13

Needs and expectations of reliability, compliance and cost of ownership “performance levels” need to be better defined and understood. These will drive design and maintenance decisions, response time requirements, inventory locations/levels, training and staffing decisions, etc. These standards will provide a means of measuring performance and should drive a constant process improvement response.

For reliability in the control centers and control houses, FAM will partner with TO and TE to develop standards and metrics based on IEEE and other applicable standards and regulations.

The previously mentioned Annual Inspection checklist will include compliance elements such as safety, environmental and security. FAM is also tracking customer satisfaction and engagement survey data to discover gaps, make changes and chart our progress.

Space Management Utilization/Remodel

Implement a Non-Office Space Management Program: FY2014

Establish standards and evaluate existing non-office spaces (warehouses and other storage space, meeting facilities, parking, restrooms, etc) to determine if it is being utilized efficiently in order to make fully informed decisions regarding requests for additional space. This initiative would create the criteria and provide the resources necessary to provide a non-office space management function.

Develop an Asset “Change of Use” policy: Complete FY2011

Create a consistent means of evaluating whether remodeling and/or changing an existing facility’s intended use in order to meet a new or different need, is the best value decision. This process will also assure that updates to drawings and other facility information is made that accurately reflects any changes made.

8. Anticipated Costs

Expense Plan for Facilities

	Actuals FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	10-Yr Total
Program Requirements	15.1	12.5	13.2	14.5	14.7	14.9	15.3	15.6	15.8	19.9	20.4	156.8
Base O&M	8.4	8.6	8.8	9.3	9.1	9.2	9.4	9.6	9.7	10.0	10.1	93.8
Facilities Seismic Hardening		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	20.0
Move cost/O&M/Lease Costs		2.8	2.1	2.2	2.3	2.5	2.5	2.5	2.6	2.6	2.6	24.7
Total	23.5	25.9	26.1	28.0	28.1	28.6	29.2	29.7	30.1	34.5	35.1	295.3

Initial CIR Capital Investment Levels for Facilities

	Actuals FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	10-Yr Total
Condition Assessment Projects	1.9	1.9	1.5	1.5	1.3	1.3	1.3	1.3	1.3	1.3	1.3	13.6
Miscellaneous New Building Projects	3.5	-	-	3.4	2.4	1.0	2.0	1.7	2.0	2.0	2.0	16.5
Hazardous Materials Abatement	0.8	0.5	0.5	0.5	0.5	0.5	0.5	-	-	-	-	3.0
Asset Decommissioning		-	-	0.6	0.5	0.6	0.5	0.4	0.2	0.3	0.2	3.3
Sustainable Investments		0.4	-	-	-	-	-	-	-	-	-	0.4
Maintenance HQ Projects	0.0	3.0	7.5	13.0	11.5	13.5	17.5	10.0	10.0	10.0	10.0	106.0
Communications Building Replacements	1.4	3.0	1.8	4.1	1.1	-	-	-	-	-	-	10.0
Portland Vancouver Office Space Strategy	1.0					11.0	6.6	4.8	4.4	4.4	0.1	31.2
Headquarters Leasehold Improvements	1.9	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.5	2.6	2.6	24.1
Business Continuity	0.4	3.0	12.0	-	-	-	-	-	-	-	-	15.0
Total	11.0	14.0	25.5	25.3	19.6	30.2	30.8	20.7	20.3	20.5	16.2	223.0

The initial CIR scenario has an insufficient capital allocation thru FY 2015. Critical facilities projects expected to occur in FY12 have shifted into FY13 and projects to provide space in the Portland/Vancouver area have been added. To meet asset strategy goals, space requirements in the Portland/Vancouver area, and critical business needs, FAM recommends this scenario, requiring reshaping the base over 10 years and adding an additional \$32M.

Preferred Capital Plan for Facilities

	Actuals FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	10-Yr Total
Condition Assessment Projects	1.9	1.9	1.5	1.5	1.3	1.3	1.3	1.3	1.3	1.3	1.3	13.6
Miscellaneous New Building Projects	3.5	-	-	4.2	6.0	6.0	6.0	6.0	6.0	6.0	6.0	46.2
Hazardous Materials Abatement	0.8	0.5	0.5	0.5	0.5	0.5	0.5	-	-	-	-	3.0
Asset Decommissioning		-	-	0.6	0.5	0.6	0.5	0.4	0.2	0.3	0.2	3.3
Sustainable Investments		0.4	1.5	-	-	-	-	-	-	-	-	1.9
Maintenance HQ Projects	0.0	4.0	21.0	11.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	106.0
Communications Building Replacements	1.4	3.0	3.0	3.0	1.0	-	-	-	-	-	-	10.0
Portland Vancouver Office Space Strategy	1.0			11.0	6.0	.05		4.8	4.4	4.4	.1	31.2
Headquarters Leasehold Improvements	1.9	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.5	2.6	2.6	24.1
Business Continuity	0.4	3.0	12.0	-	-	-	-	-	-	-	-	15.0
Total	11.0	15.0	42.0	34.0	28.2	20.1	20.4	25.0	24.4	24.5	20.2	254.3

9. Addendums

Addendum A: Capital Project Proposal Prioritization

I. NEEDS	ASSET MANAGEMENT PLANS	EVALUATION CRITERIA	REASON FOR POINTS	POINTS
		Projects or requirements consistent with current BPA Asset Management Strategy and Plans.	High priority project that supports or is consistent with a current Asset Management Plan.	5
			Priority project that supports or is consistent with a current Asset Management Plan.	4
			Necessary project that supports or is consistent with a current Asset Management Plan.	3
			Nice to have project that supports or is consistent with a current Asset Management Plan.	2
			Project with no consistency or relationship to an Asset Management Plan.	1
			Project that reduces support, or is inconsistent with a current Asset Management Plan.	0
	SAFETY	EVALUATION CRITERIA	REASON FOR POINTS	POINTS
		Personnel Safety	Completion of this project will substantially increase public or employee safety.	5
				N/A
			Completion of this project will increase public or employee safety.	3
				N/A
			Completion of this project will maintain current levels of public or employee safety.	1
			Completion of this project will not maintain public or employee safety. (Immediate disapproval without mitigation measures).	0
	TIME REQUIREMENTS	EVALUATION CRITERIA	REASON FOR POINTS	POINTS
		Project Urgency	This project will be required for at least 20 years.	5
				N/A
			This project will be required for at least 10 - 20 years.	3
				N/A
			This project will be required for 10 years.	1
			This project will be required for less than 10 years.	0
	STATUTORY COMPLIANCE	EVALUATION CRITERIA	REASON FOR POINTS	POINTS
		Code or Regulatory compliance	Completion of this project will remedy mandatory code compliance or regulatory issues.	5
			N/A	N/A
			Completion of this project will remedy grandfathered code compliance issues.	3
			N/A	N/A
			Completion of this project will not remedy any code compliance issues.	1
			Completion of this project will cause non-compliant code conditions.	0

Addendum A: Capital Project Proposal Prioritization Cont'd

II. COSTS	ASSET COSTS	EVALUATION CRITERIA	REASON FOR POINTS	POINTS
		Life-cycle costs	Completion of this project may substantially decrease total life-cycle asset costs.	5
				N/A
			Completion of this project may moderately decrease total life-cycle asset costs.	3
				N/A
			Completion of this project has no affect on total life-cycle asset costs.	1
			Completion of this project could increase total life-cycle asset costs.	0
	INDIRECT COSTS	EVALUATION CRITERIA	REASON FOR POINTS	POINTS
		Affect on other Assets	Completion of this project may substantially decrease total life-cycle asset costs of other assets.	5
				N/A
			Completion of this project may moderately decrease total life-cycle asset costs of other assets.	3
				N/A
			Completion of this project will have no affect on total life-cycle asset costs of other assets.	1
			Completion of this project could increase total life-cycle asset costs of other assets.	0

Addendum A: Capital Project Proposal Prioritization Cont'd

III. BENEFITS	STAKEHOLDERS	EVALUATION CRITERIA	REASON FOR POINTS	POINTS
		Affect of Project on Stakeholders	Completion of this project will benefit the majority of stakeholders.	5
				N/A
			Completion of this project will benefit several stakeholders.	3
				N/A
			Completion of this project will benefit one or two stakeholders.	1
			Completion of this project will not benefit any stakeholders.	0
	BPA	EVALUATION CRITERIA	REASON FOR POINTS	POINTS
		Operational Efficiency/Effectiveness	Completion of this project will substantially improve BPA operational efficiency/effectiveness. (Significantly fewer resources required for a BPA job/function).	5
				N/A
			Completion of this project will moderately improve BPA operational efficiency/effectiveness. (Fewer resources required for a BPA job/function).	3
				N/A
			Completion of this project will maintain current levels of BPA operational efficiency/effectiveness. (Resources required for a BPA job/function would not change.)	1
			Completion of this project would detrimentally affect BPA operational efficiency/effectiveness. (Resources required for a BPA job/function could increase).	0
	SCOPE OF IMPACT	EVALUATION CRITERIA	REASON FOR POINTS	POINTS
		Affect on other Projects	Completion of this project will substantially benefit or synergize other BPA projects.	5
			N/A	N/A
			Completion of this project will moderately benefit or synergize other BPA projects.	3
			N/A	N/A
			Completion of this project will not benefit or synergize other BPA projects.	1
			Completion of this project will negatively affect other BPA projects.	0

Addendum A: Capital Project Proposal Prioritization Cont'd

IV. RISKS	FUTURE NEED	EVALUATION CRITERIA	REASON FOR POINTS	POINTS
	Long-Term Necessity		This investment will meet a known need for more than 20 years.	5
				N/A
			This investment will meet a known need for the next 10-20 years.	3
				N/A
			This investment will meet a known need for the next 10 years.	1
			Uncertain as to the mid and long-term need for this project.	0
	INACTION	EVALUATION CRITERIA	REASON FOR POINTS	POINTS
	Affect of Inaction		Not completing this project would have significant, detrimental effects to BPA or the public.	5
			N/A	N/A
			Not completing this project would have moderate, detrimental effects to BPA or the public.	3
			N/A	N/A
			Not completing this project would have some, detrimental effects to BPA or the public.	1
			Not completing this project would have no detrimental effects to BPA or the public.	0
V. OTHER	SECURITY	EVALUATION CRITERIA	REASON FOR POINTS	POINTS
	Security of personnel and equipment		This project is critical to secure BPA personnel and other resources.	5
				N/A
			This project is necessary to adequately secure BPA personnel and other resources.	3
				N/A
			This project will enhance the security of BPA personnel and other resources.	1
			This project does not affect the security of BPA personnel and other resources.	0
	ENVIRONMENT	EVALUATION CRITERIA	REASON FOR POINTS	POINTS
	Environment		This project is critical to environmental protection and/or mandatory for environmental compliance.	5
			This project will result in environmental protection, environmental compliance, and/or environmental liability and risk reduction.	4
			This project will contribute significantly to environmental protection and/or demonstrate BPA's environmental stewardship.	3
			This project supports BPA's environmental stewardship and/or BPA environmental best management practices.	2
			This project provides some environmental benefit.	1
			This project has no environmental driver.	0
	ENERGY EFFICIENCY	EVALUATION CRITERIA	REASON FOR POINTS	POINTS
	Energy Efficiency		Completion of this project will substantially increase energy efficiency.	5
			N/A	N/A
			Completion of this project will moderately increase energy efficiency.	3
			N/A	N/A
			Completion of this project will not increase energy efficiency.	1
			Completion of this project will negatively affect energy efficiency.	0

Addendum B

NEF Pictures

Switchyard Drainage Issues

Poor pavement and drainage structures maintenance...



...can cause outfalls and ditches to fail which allows storm water to back up.

Switchyard Drainage Issues (cont.)

Silt infiltrates switchyard rock, altering its electrical properties.



Saturated soils weaken, putting structures at risk. Standing water increases hazards to electrical workers.

Switchyard Drainage Issues (cont.)



Effects of frost heave and saturated soils

Groundwater Infiltration Issues

Critical sump pumps failing, putting control house basements at risk of flooding. A majority are not alarmed.



Infiltrated water reaches high levels, creating collateral damage and safety concerns.

Roof Maintenance

Presence of leaves, moss and saturated roof areas damages roof structure.



Roof drainage structures blocked. Saturated roofing materials.

Aged Facilities

Failed downspouts.



Deferred maintenance. Exposed asbestos-containing window glazing and lead paint.

Code Violations

Water heater installation with four code violations



Erosion Damage

Severe erosion damage puts BPA oil tanks, fence, wood & steel structures at risk.



Repairs almost complete